

WHAT IS CLAIMED IS:

1. A method for manufacturing a diffuser for a backlight module comprising:

(a) providing a transparent substrate;

5 (b) forming a first transparent photoresist layer on said transparent substrate;

(c) spreading a plurality of masking particles on said first transparent photoresist layer;

(d) exposing and developing said first transparent photoresist layer;

10 (e) removing said masking particles; and

(f) etching the exposed region of said first transparent photoresist layer to form a first scattering array.

2. The method as claimed in claim 1 further comprising a step (g) forming a passivation layer on said first transparent photoresist layer.

15 3. The method as claimed in claim 1, wherein said first transparent photoresist layer having at least a photo-sensitive polymer and a photo initiator.

20 4. The method as claimed in claim 1, wherein said transparent substrate is made of acrylic, polyethylene terephthalate (PET), or polycarbonate (PC).

5. The method as claimed in claim 1, wherein said first transparent photoresist layer is a polyacrylate-based photoresist.

6. The method as claimed in claim 1, wherein said masking particles are made of glass, TiO_2 , silica, or polystyrene.

7. The method as claimed in claim 1, wherein the particle size of said masking particles ranges from 100nm to 50 μ m.

8. The method as claimed in claim 2, wherein said passivation layer is made of polyacrylates, polycarbonate, polyethylene terephthalate (PET), or polyethylene (PE).

9. The method as claimed in claim 1 further comprising the following steps after step (f):

(f-1) depositing a second transparent photoresist layer on said transparent substrate and said first scattering array;

10 (f-2) spreading a plurality of masking particles on said second transparent photoresist layer;

(f-3) exposing and developing said second transparent photoresist layer;

(f-4) removing said masking particles; and

15 (f-5) etching the exposed region of said second transparent photoresist layer to form a second scattering array.

10. The method as claimed in claim 9 further comprising a step (g2) forming a passivation layer on said second transparent photoresist layer.

20 11. The method as claimed in claim 9, wherein said second transparent photoresist layer having at least a photo-sensitive polymer and a photo initiator.

12. The method as claimed in claim 9, wherein said second transparent photoresist layer is a polyacrylate-based photoresist.